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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Shafiq Pirbhai

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EXAMINER

JAKOVAC, RYAN J

ART UNIT

PAPER NUMBER

2445

MAIL DATE

DELIVERY MODE

05/29/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/775,214	Applicant(s) PIRBHAI ET AL.	
	Examiner RYAN J. JAKOVAC	Art Unit 2445	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5,8-14,16 and 18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,8-14,16 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 03/03/2009 have been fully considered but they are not persuasive. Applicant argues in summary that the combination of RFC2547bis and RFC1771 does not disclose for peers that do not support the route refresh feature, maintaining a rejected routes tree. However, RFC2547bis, on pg. 27-29, discloses that invalid/unused routes are stored in order to protect against the need to reacquire (for example through a route refresh) all such routes if the clients' "disappearance" is only temporary.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claim 1 is rejected under 35 U.S.C. 101; these claims cites a method but fails to (1) positively recite the statutory class to which they are tied to, or (2) transform underlying subject matter (such as an article or material) to a different state or thing. The method is directed towards managing virtual routing forwarding tables, however, this/these element(s) is/are interpreted as being embodied in software or a program per se and thus do not belong to any statutory class.

4. Claim 16, 18 is rejected under 35 U.S.C. 101. Claim 18 is directed towards a tree data structure. This element is considered to be software or a program per se, which is not one of the categories of statutory subject matter.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1-3, 5, 8-14, 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over RFC2547bis - BGP/MPLS IP VPSs (hereinafter RFC2547bis) in view of RFC1771 – A Border Gateway Protocol 4 (hereinafter RFC1771).

Regarding claim 1, 5, 10, the combination of RFC2547bis and RFC1771 teaches a method of managing virtual routing forwarding (VRF) tables at a provider edge PE router of a L3 virtual private network (VPN), said PE router maintaining a VPN-IP master routing information base (RIB) and a sub-RIB for each said VRF table (RFC1771, pg. 6.), comprising the steps of:

maintaining an import route target (ImpRT) tree comprising all ImpRT attributes currently configured on said PE router (RFC2547bis, pg. 6, PE routers contain routing

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information about the VPNs they are directly connected to. Pg. 9-10, PE routers maintain a number of separate forwarding tables. See also pg. 31.);

modifying an ImpRTi attribute of a VRFi table (RFC2547bis, pg. 21, routes associated with route targets are distributed to VRF tables associated with the route target. See also, pg. 23, PE routers distribute routes to each other. See also, pg. 25);

searching said ImpRT tree for a match to said ImpRTi attribute to identify a VRFm table having said ImpRTi attribute (RFC2547bis, pg. 7-12, 14, when an IP packet is received the destination IP address is searched for. The ingress VRF is identified and used for incoming packets.);

for peers that do not support the route refresh feature, maintaining a rejected routes tree (RFC2547bis, pg. 27-29, invalid/unused routes are stored in order to protect against the need to reacquire (for example through a route refresh) all such routes if the clients' "disappearance" is only temporary.);

searching for routes in a sub-RIB associated with said VRF table (RFC2547bis, pg. 20-25, routes imported into VRF tables. See also pg. 7-12, 14.); and

copying said routes from said sub-RIB into said VRF table based on all route target attributes configured for said VRF table, including said modified ImpRT attribute (RFC2547bis, pg. 7-12, 14. See also, 20-25, routes imported into VRF tables.).

RFC1171 discloses for peers supporting a route refresh feature, performing a route refresh operation only when a match is not found (RFC1771, pg. 43-44, when a new route is received (i.e. not matched to an existing route), the route is updated to all other BGP speakers (i.e. route refresh).); and updating said VRFi table accordingly, using an association between

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each said VRF table and a respective sub-RIB (RFC2547bis, pg. 21, VRF tables are updated with route target attributes.).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine performing a route refresh operation only when a match is not found as taught by RFC1771 with the method of RFC2547bis in order to provide internal updates (RFC1771, pg. 43-44) and since RFC2547bis is concerned with route distribution among PEs by BGP and RFC1771 details known methods of route distribution using BGP.

Regarding claim 2, the combination of RFC2547bis and RFC1771 teaches the method of claim 1, further comprising: maintaining a list of all ImpRT attributes at a PE node, each ImpRT attribute being associated with all VRF tables that are currently configured with said modified ImpRT attribute (RFC2547bis, pg. 6, PE routers contain routing information about the VPNs they are directly connected to. Pg. 9-10, PE routers maintain a number of separate forwarding tables.).

Regarding claim 3, 8, the combination of RFC2547bis and RFC1771 teaches the method of claim 1, further comprising adding said ImpRT attribute to said VRF table (RFC2547bis, pg. 20, routes are imported (i.e. added) into VRF tables.).

Regarding claim 9, the combination of RFC2547bis and RFC1771 teaches the method of claim 2, wherein said searching is performed through said master RIB (RFC1771, pg. 43-44, see also pg. 5-7.).

Regarding claim 11-14, the combination of RFC2547bis and RFC1771 teaches the method of claim 1, further comprising removing said import route target ImpRTi from said VRFi table (RFC2547bis, pg. 25, the PE discards all the routes which no longer have any of the PE's VRF's import targets as one of their route target attributes. See also, RFC1771, pg. 36, withdrawal of routes.).

8. Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over RFC2547bis in view of RFC1771 and further in view of US 7,139,838 to Squire et al (hereinafter Squire).

Regarding claim 16, 18, the combination of RFC2547bis and RFC1771 teaches at a provider edge PE router, a tree data structure, stored on a computer-readable storage medium, comprising, for each import route target ImpRT attribute configured on said PE router (RFC2547bis, pg. 6, PE routers contain routing information about the VPNs they are directly connected to. Pg. 9-10, PE routers maintain a number of separate forwarding tables. See also pg. 31.), and an association between each said VRF table and a respective sub-RIB (RFC1771, pg. 6.), wherein a route refresh operation is performed only if a match between a modified ImpRT attribute and an attribute stored in the VRF table is not found (RFC1771, pg. 43-44, when a new route is received (i.e. not matched to an existing route), the route is updated to all other BGP speakers (i.e. route refresh).). Squire discloses a pointer to a virtual routing forwarding table having said respective ImpRT attribute (Squire, Col. 4, line 55-67, Each network device

maintains a database. Pointers are used in the database storing the routing information to separate information.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to combine a pointer to a virtual routing forwarding table having said respective ImpRT attribute as taught by Squire with the method of RFC2547bis and RFC1771 (as described above) in order to divide stored information into distinct pairs, for example, routing information from inbound update messages (Squire, col. 4, line 55-67.).

Conclusion

9. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RYAN J. JAKOVAC whose telephone number is (571)270-5003. The examiner can normally be reached on Monday through Friday, 7:30 am to 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava can be reached on 571-272-7304. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RJ/

/VIVEK SRIVASTAVA/

Supervisory Patent Examiner, Art Unit 2445